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ABSTRACT

The Maryland Education Microcomputer Network and Marynet are electronic systems that focus on informal resource exchanges for individuals interested in curriculum applications of microcomputers in pre-school through twelfth grade and in teacher education. The network is free to all Maryland citizens involved with the mission of the schools. Others who wish to participate may make arrangements. An international user group participates through long distance services. The open-exchange process is shaped by its participants and their use of the system. The process is coordinated by a "networker" and several regional and topical "networkers." A research component of this effort focuses on systematic study of the network as "teaching" and "curriculum innovation." Network exchange processes are being studied through use of selected models from research on teaching and teacher education. Designs take several tracks; one focuses on the content of communication, and a second track examines the message system through use of a qualitative approach to disclose the characteristics of electronic communications in educational networking. The third track involves a survey of telecommunication activity to schools and colleges. (JMK)

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A MICROCOMPUTER NETWORK FOR PRESERVICE AND INSERVICE TEACHER EDUCATION

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A MICROCOMPUTER NETWORK FOR PRESERVICE AND INSERVICE TEACHER EDUCATION

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MARYLAND EDUCATION

MICROCOMPUTER NETWORK

AND

MARYNET

MARYLAND EDUCATION MICROCOMPUTER NETWORK AND MARYNET: AN INSERVICE TEACHER EDUCATION STRATEGY

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The Maryland Education Microcomputer Network (MEMN) and Marynet are electronic systems focused on an informal resource exchange for individuals interested in curriculum applications of microcomputers in pre-school through grade twelve and teacher education. The network is free to all Maryland citizens involved with the mission of our schools. Others who wish may make arrangements to participate. An international user group participates through long distance services. The system is an open exchange process and is shaped by its participants and their use of the system for their purposes. The process is coordinated by a "networker" and several regional and topical networkers. In essence, the network "belongs" to those who shape and use it. The information exchanged is created through network interaction. Since the people who interact may be teachers, children, parents, social workers, counselors, medical workers, professors, supervisors, administrators, information specialists, librarians, computer specialists, interested citizens and persons from other cultures, there exists an environment not frequently available to the users. A research component of this effort focuses on systematic study

of the network as "teaching" and "curriculum innovation."

RESEARCH AGENDA

The assumption that this network represents a type of teaching phenomena and curriculum innovation is the framework for the research agenda. Hence, network exchange processes are being studied using selected models from research on teaching and teacher education.

Designs take several tracks. One focuses on the content of communication. The investigator uses inductive content analysis of communications for the purpose of identifying cognitive and affective processes and substance of interaction. In addition, paths of communication related to curriculum uses of microcomputers are followed, describing and detailing outcomes.

An example of path tracing is found in the efforts of two teachers from two different districts who originally contacted one another through the network and developed a common interest around the question of how to use networking and telecommunication in the curriculum. They subsequently used the network to plan parts of a 4th grade social studies unit on Maryland. Social studies specialists were brought in, meetings were held, more plans were made face-to-face and via the network and at last look fourth grade children in Howard County and Montgomery county were using telecommunications and networking to study population, local buildings, school programs, local sites and so forth. As users from western, eastern and southern Maryland become involved the school curriculum will be impacted. Data

sources supporting actual outcomes of network communications are located in the ongoing printout of all network transactions which has been maintained since the network went online. See Figure 1.

A second track examines the message system using a qualitative approach in an effort to disclose the characteristics of electronic communications in educational networking. A critique of communications will provide another view which, while difficult to produce, is possibly the most powerful information to be created about the phenomena being investigated.

The third track involves a survey of telecommunication activity in schools and colleges. Questions are being asked about who is doing it, with what equipment, when and for what purpose. Assessments are carried out in relation to types of pre-service and inservice curricula needed.

Initial findings indicate that (1) telecommunications activity is just beginning. (2) There is more activity in the homes of students and teachers leading one to infer that the school and the home may develop a different relationship around educational involvements. (3) Individuals involved are what we might refer to as highly motivated and future oriented persons. The interest is "grass roots" and not top down at this point. (4) Institutional role contraints have as yet to impact most curriculum applications in the elementary school. This condition may not prevail. (5) Apple computers are most frquently used with Hayes modems. Terminal program use varies widely.

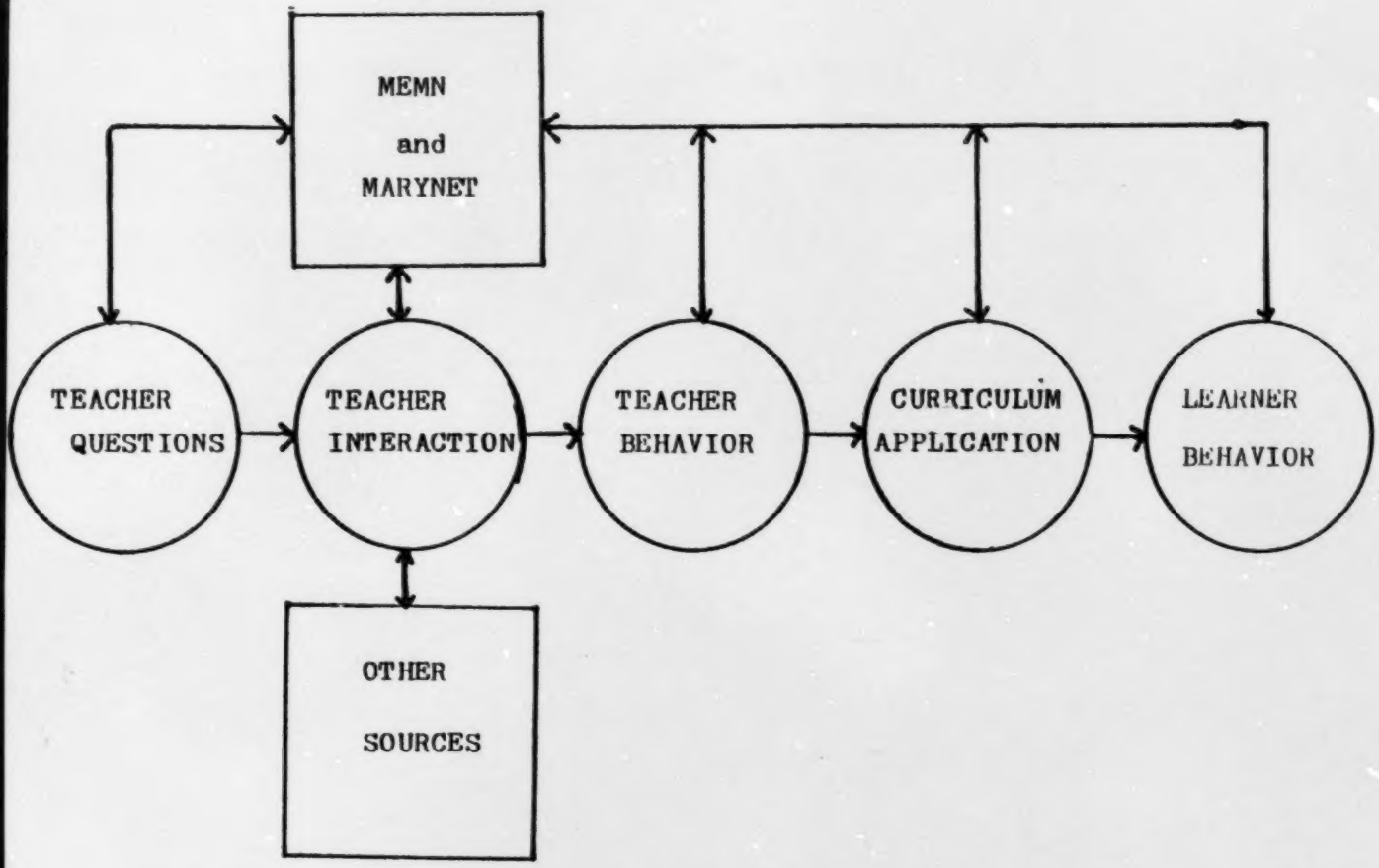

Figure 1. Network Path Tracing

The most frequent need surrounding pre-service teacher education is the plea to start preparing teachers before they enter practice. Inservice curricula offerings vary widely with most districts just starting. Where there are extensive programs the teachers are supporting efforts through expertise gained as they teach themselves. Teachers are the teachers of teachers. Increasing efforts from the Maryland State Department of Education are starting to impact inservice curricula. A task force completed a survey of schools uses of computers which will is available and will be summarized in MEMN. University of Maryland, College Park and Baltimore County are providing significant leadership.

THE USERS

The user group most frequently accessing the network are teachers in elementary, middle and secondary schools. It is these individuals to whom we are looking for insights related to the application of microcomputers in the classroom. Because of the roles they assume and the settings in which they work, teachers are in many ways isolated from a great deal of the information that they need in order to make judgments as they implement a new technology in their classrooms. There are, of course, excellent inservice programs available in many school districts and colleges. This network supplements those programs by making available a system through which an individual can access others who have similar interests and problems to solve. They

can chat about a topic of their choice, at a time which they select, to a person selected by them, in a format which seems to work and can be stored for future use if desired.

Children and students use the network for much the same purpose as teachers. They may indeed become a resource. As children and students use the network they have the opportunity to learn about some very powerful ideas such as: "What is a network?", What is a database?", "How do I create these systems?", and "What can networks and databases do?". They are directly involved with all types of communication skills such as reading, writing, spelling, composition, editing, organizing, programming, word processing and so forth. They are also learning more about what the computer can do. They create uses for the computer that are unique and they learn that the computer is a tool which they can control. Uses of the computer such as these bring the children and students directly to the ethical issues of computer technology.

Others who come online are individuals whose lives may not be directly associated with the classroom, but who have an interest or a responsibility for microcomputer curriculum applications. They learn of the network either because they have become involved with computers and want to know more about applications in their work or they have become interested in what children and teachers are doing with computers. An example would be the cooperation developing between MSDE School Library Services Branch and MEMN in bringing the services of the MARYLAND INSTRUCTIONAL RESOURCES NETWORK to extended use through

the development of special MEMN files for database uses by teachers.

Current findings from a survey of computer use in schools involved with this network indicate that most computer contacts for many students are in the home, although not all families can afford them or choose to own them. Given this condition, much activity around network use comes as children access home computers and modems bringing families into the exchange process.

Collegiate uses of the network are developed as instructors and students use transfer files to send assignments and corrected papers, interact around a topic of interest using the chat mode, answer each other's questions, store information for group access and so forth. Computer assisted instruction disk files can be transferred to and from users. The network can be used as a vehicle for dialogue journaling and reflection. Electronic mail features make possible an additional attractive means for inter and intra institutional communication.

A number of school support services can use the network for such activities as sending homework to home bound students, interacting with classmates if away from school, and leaving messages for teachers when children are to be away from school. Parents can use the system to leave messages for students and each other if school activities are involved.

A FREE NETWORK

In keeping with the concept of free public education for the citizens of this nation, the developer of the network has worked to keep the service in the same category as the schools. Although the concept is worthy, it is only because of the power of the computers and the interaction of the users that the network can be accessed without fees. Expenses involve telephone costs. The expenses have been eliminated for much network interaction through the development of local networks called MARYNET. Using this approach, interested users volunteer to care for the operation of a computer and phone line that can be accessed in a local calling area. Each calling area of the state can have this type of service. The central network accesses the local system, downloading or uploading messages so that all networks have all messages from the users around the state. Regional meetings with networkers handle whatever system management is necessary and also serve as a forum for creating new possibilities for the network. Calling hopscotch fashion across the state regional networks is also possible.

INTERNATIONAL GROUPS

It did not take the users of the network long to discover that they could call people in other cultures. Following the idea of multicultural networking, users whose native language brings them together chat in the language of their choice. The messages sent by these users can be used by others who are studying a particular language or culture.

OPEN EXCHANGE NETWORK

Primarily because the users participate in the network out of their own interests, motivations shape an open process dependent on self- selection for the content and process of the network information system. Users create an ever growing database through message sending, chats and requests for literature searches and information sent by upload to the download transfer files.

NETWORK COORDINATION

The central networker functions primarily as a researcher and in addition manages the system, maintains the files, queries databases. functioning as a tutor and resource, the networker assumes a unique and emerging teacher educator role.

It is not necessary for the networker to be an expert computer programmer or technician. Some computer knowlege is required and it is necessary that she be well informed and keep up with developments related to curriculum applications of computing. What is essential is that the networker be a trained, proficient teacher and curriculum innovator. The network is teaching phenomena. The networker becomes a type of teaching ombudswoman with no real power within the system, but with responsibility to act in ways that help and enable others to achieve their goals. The networker mobilizes the interests of users for the benefit of all users.

THE NETWORK ENVIRONMENT

The informal exchange network environment created by users interacting within the exchange process is a unique experience for many in that contact with individuals not usually encountered is a prevailing experience. A different social system is created in which roles are developed and determined instantly as users respond to one another around common interests that have varying duration and meaning. When one signs on the network using the keyboard of the computer, one is communicating in an unusual mode. Missing are many cues ordinarily present in social interaction. It is somewhat like the communication process that occurs using Morse code only the code is known to all. One meets another person, chats, becomes involved immediately with common interests without knowing a name, sex, age, race, economic status, education and so forth. Users continue interaction on a self-selection basis. Constraints on the users's involvement are completely under his control. However, they do not continue very long without seeking usual social interaction through phone calls, meetings and new and important professional relationships.

Finally, the most powerful possiblity emerges. Users have access to knowledge in a scope and intensity not usually available. It is quite possible that many discoveries can be made about what knowledge is "out there" and "how might one use it." Teachers and students ordinarily do not assume roles in which they are knowledge producers and extensive users of information from the wealth of available knowledge. The democratization of knowledge seems to be a reality for the schools as perhaps it has not been before. Industry, business, government and scholars are quite familiar with the roles now

available to every person who "signs on." These possibilities are attractive to network users.